Maine Department of Environmental Protection
July 10, 2002

Outline of Stormwater Rules Work Group Talk
July 10 Meeting

- Brief summary of stressors that urbanization places on the aquatic life in streams
  - Loss of stable habitat as a result of channel instability (frequent down-cutting, widening, sedimentation) due to elevated frequency and duration of erosive flows, loss of flood plain and channel alterations
  - Loss of habitat and velocity as a result of reduced base-flow
  - Loss of diversity of habitat and velocity due to loss of riparian debris contributions
  - Elevated temperatures due to loss of riparian shade, reduced baseflow and warm stormwater contributions
  - Sedimentation of habitat from upstream channel failures and/or watershed erosion
  - Eutrophication from stormwater nutrients, and possible diurnal DO depressions from a combination of plant respiration and reduced flow
  - Toxic effects of stormwater contaminants (metals, hydrocarbons)

- Brief summary effects these stressors have on aquatic life
  - Loss of temperature and DO sensitive taxa
  - Shift to taxa with short life cycles
  - Shift from heterotrophic to autotrophic energy/organic matter source
  - Loss of species diversity and dominance of tolerant, short life cycle taxa
  - Shift of community from insect to non-insect taxa
  - Loss of stream community's ability to process organic matter

- Discussion of Class B and Class C river and stream aquatic life standards
  - Class B. . . . shall be of sufficient quality to support all aquatic life indigenous to the stream without detrimental changes in the resident biological community.
  - Class C. . . . shall be of sufficient quality to support all species of fish indigenous to the stream and maintain the structure and function of the biological community.
  - DEP evaluates stream attainment of AqL standards using a model that predicts probability that the stream attains a certain class based on a variety of metrics of the macroinvertebrate community.

- Discussion of the relationship between watershed % imperviousness and stream quality
  - Studies from around the country suggest that at 10% watershed imperviousness streams start to show significant impairment of the biological community and are severely degraded at 25% or greater.
  - For Maine, no streams with greater than 10% imperviousness that have been evaluated for attainment of aquatic life standards have met Class B standards, and many fail to meet Class C standards as well.

- Brief description of method used to estimate % imperviousness in Maine stream watersheds

- Discussion of list and maps of streams with 7% or greater watershed imperviousness
  - Mostly 2nd and 1st order streams, many unnamed, in urban or urbanizing areas
  - % watershed imperviousness
  - Attainment status and likelihood that many more streams will fail to meet class once they are evaluated

- Discussion of % watershed imperviousness/attainment status as a basis for defining streams most at risk from development
  - Recommend 7% because:
    - Stream watersheds >7% are likely to pass 10% threshold in 10 to 25 years. The streams that are currently less than 10% imperviousness are the ones where implementation of stormwater standards on new development may effectively avoid or delay impairment.
    - Current imperviousness estimates probably underestimate actual imperviousness because they are based on a 92 satellite image and do not include last 10 years of construction
  - Non-attainment streams will need more than implementation of stormwater standards on new development. In order to bring streams into attainment, will need to address existing sources/problems.
    - TMDLs
    - Stormwater Utilities
    - Stream and Riparian Restoration

- Discussion of quantity standards for most at risk and non-attainment streams
  - Discussion of volume vs. peak control; overlapping peaks; importance of more frequent storm events than 2, 10 and 25; and options for minimizing erosive flows
  - Proposed stream protection standard. 24 hr extended detention of the 1 year storm
  - Flooding standard. Peak flow 25 yr 24 hr storm.
  - Probable need for retrofitted controls in non-attainment watersheds

- Discussion of quality standards for most at risk and non-attainment streams
  - Sliding scale TSS and alternatives
  - 80% TSS
  - Off-sets, mitigation, stormwater utility, etc.